

# **CBO TESTIMONY**

---

Statement of  
Cindy Williams  
Assistant Director  
National Security Division  
Congressional Budget Office

on  
Modernizing Tactical Aircraft

before the  
Subcommittee on Military Research and Development  
and the  
Subcommittee on Military Procurement  
Committee on National Security  
U.S. House of Representatives

March 5, 1997

## **NOTICE**

This statement is not available  
for public release until it is  
delivered at 2:00 p.m. (EST),  
Wednesday, March 5, 1997.



**CONGRESSIONAL BUDGET OFFICE**  
SECOND AND D STREETS, S.W.  
WASHINGTON, D.C. 20515

Report Documentation Page			Form Approved OMB No. 0704-0188		
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE <b>05 MAR 1997</b>		2. REPORT TYPE		3. DATES COVERED <b>00-00-1997 to 00-00-1997</b>	
4. TITLE AND SUBTITLE <b>CBO Testimony. Modernizing Tactical Aircraft</b>			5a. CONTRACT NUMBER		
			5b. GRANT NUMBER		
			5c. PROGRAM ELEMENT NUMBER		
6. AUTHOR(S)			5d. PROJECT NUMBER		
			5e. TASK NUMBER		
			5f. WORK UNIT NUMBER		
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) <b>Congressional Budget Office,Ford House Office Building 4th Floor,Second and D Streets, SW,Washington,DC,20515-6925</b>			8. PERFORMING ORGANIZATION REPORT NUMBER		
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)			10. SPONSOR/MONITOR'S ACRONYM(S)		
			11. SPONSOR/MONITOR'S REPORT NUMBER(S)		
12. DISTRIBUTION/AVAILABILITY STATEMENT <b>Approved for public release; distribution unlimited</b>					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES <b>26</b>	19a. NAME OF RESPONSIBLE PERSON
a. REPORT <b>unclassified</b>	b. ABSTRACT <b>unclassified</b>	c. THIS PAGE <b>unclassified</b>			

I appreciate the opportunity to appear before you today to discuss the Congressional Budget Office's (CBO's) analysis of tactical aircraft plans for the Department of Defense (DoD). Last June, I testified before the Subcommittees on the same topic.

At that time, I made the following points:

- o U.S. fighter fleets now outmatch the fighter fleets of any potential adversary;
- o DoD plans to purchase enough tactical aircraft to meet the inventory requirements of its fleets through 2020;
- o DoD's plans assume that tactical aircraft will operate for long periods, and as a result, U.S. tactical aircraft fleets will reach unprecedented ages; and
- o DoD's planned aircraft purchases for fighter fleets will be difficult to afford.

I suggested then that the Department of Defense and the Congress might wish to consider policy alternatives to address those last two points.

Last month, we released a study requested by Mr. Weldon and Mr. Spratt titled *A Look at Tomorrow's Tactical Air Forces*. That study, available from CBO, provides a considerably more detailed look at tactical forces than can be covered in testimony. In addition to verifying the points we raised in our preliminary analysis, it lays out specific alternatives that illustrate the hard choices that DoD might have to make if current plans for tactical aviation prove to be unaffordable. After a short discussion of the other main points of our study, I would like to focus my remarks today on the issue of affordability and on alternatives that illustrate approaches to reducing spending.

#### WHAT DoD PLANS FOR U.S. TACTICAL AIR FORCES

The Air Force, Navy, and Marines all employ fixed-wing fighter and attack aircraft that fight enemy planes in the air and attack targets on the ground. Current plans call for the equivalent of 20 Air Force tactical fighter wings, 11 wings that operate off the Navy's large deck carriers, and four wings of fixed-wing fighter and attack aircraft for the Marine Corps. To fill out those force levels, DoD needs to retain about 3,500 aircraft in inventory.

The bulk of DoD's inventories are currently made up of four kinds of fighter and attack aircraft. Most of the Air Force fleet consists of F-16s (a small, relatively

inexpensive, multipurpose plane) and F-15s (a larger, more capable, more expensive fighter). The major portion of the Navy and Marine Corps inventory consists of F/A-18s, a multipurpose plane (that is, one that performs both fighter and attack roles). F/A-18s operate both in Navy carrier-based air wings and in fighter squadrons in the Marine Corps. The Marine Corps also operates the AV-8B Harrier, which can take off in short distances and land vertically--the so-called short takeoff vertical landing (STOVL) capability.

DoD's plans for modernization call for replacing all of those planes with three types of aircraft: the F-22, the F/A-18E/F, and the Joint Strike Fighter. DoD expects to acquire 438 F-22 fighters for the Air Force and 1,000 F/A-18E/Fs for the Navy. U.S. purchases of the Joint Strike Fighter (JSF)--a multipurpose plane being developed for all three services as well as the British Royal Navy--may total 2,978. All three planes are to be more effective than the planes they will replace.

The planes will also be expensive. CBO estimates that the total cost to develop and acquire about 4,400 planes amounts to more than \$350 billion, even without factoring in inflation. That estimate includes total funds for development and procurement and is based on plans for the fiscal year 1997 budget. DoD has not provided CBO with estimates of funding requirements for the fiscal year 1998 budget for those programs beyond 2003. Under the plans for the 1997 budget, 3,436 of the 4,400 planes would be bought through 2020. The DoD fiscal year 1998 budget

request suggests that over the 1998-2003 period, DoD intends to spend about \$45.9 billion (in 1997 dollars) on the three new aircraft.

#### U.S. FIGHTER FLEETS OUTMATCH THE FIGHTER FLEETS OF ANY POTENTIAL ADVERSARY

The need to modernize U.S. forces depends in part on the size and capability of the fighter fleets of potentially threatening countries. Under current planning scenarios, set forth in the Clinton Administration's Bottom-Up Review, DoD must keep enough forces to fight and win two major regional conflicts at nearly the same time.

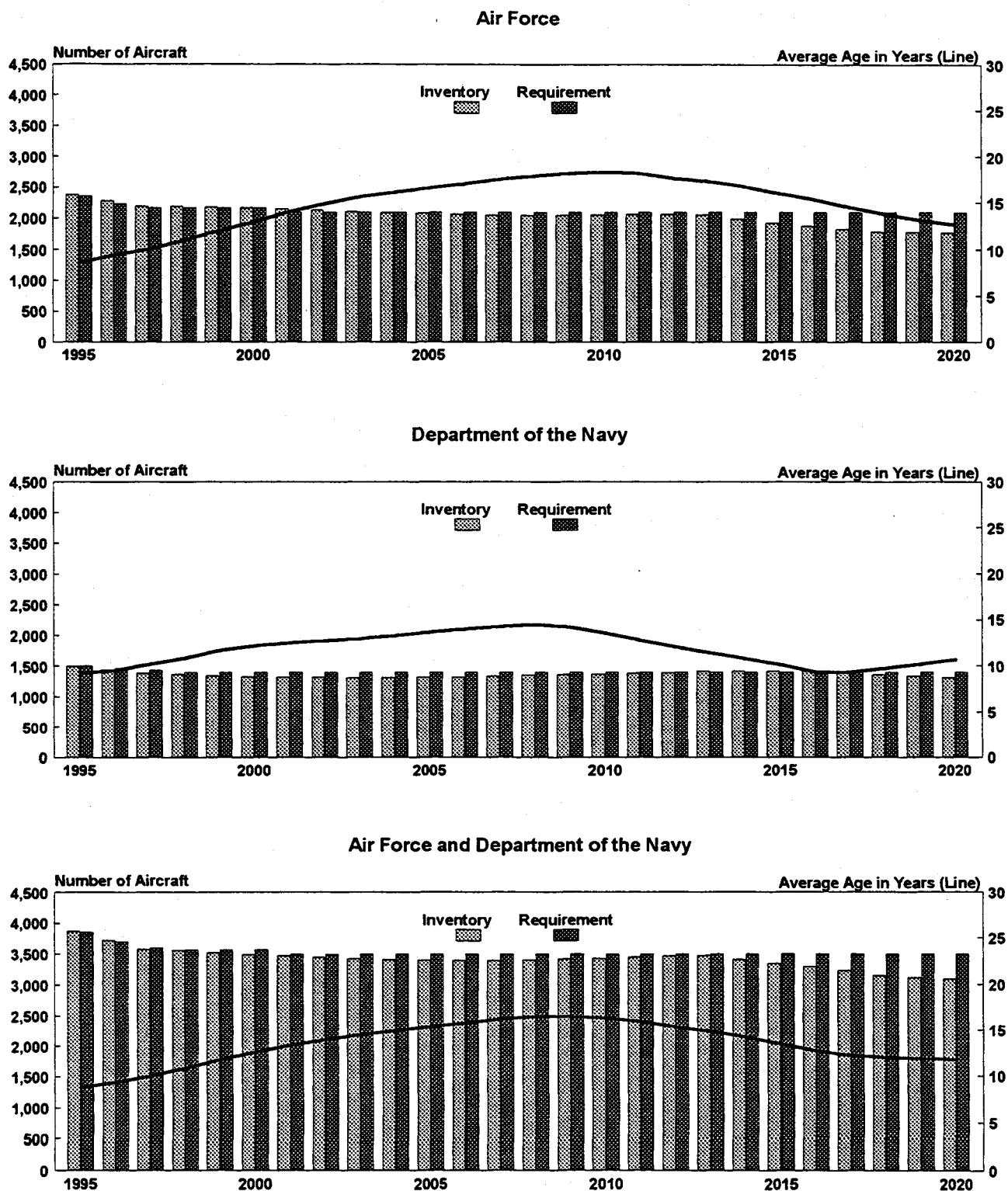
A recently released Navy analysis of threats to naval aviation includes estimates of the fighter inventories of Iraq, Iran, and North Korea (countries viewed as the most likely adversaries in major regional conflicts) as well as those of Russia and China (countries that possess considerable combat potential). According to the Navy's analysis, which also included an estimate of how modern those countries' aircraft are, not one of those countries has an aircraft inventory that equals U.S. forces in either size or modernity today. Nor did the Navy's forecast for inventories--the only publicly available official U.S. estimate of the future inventories of potential adversaries--suggest that the fleets of those countries will rival U.S. fleets at any time through 2005.

Even though the fighter fleets of potential adversaries should be no match for U.S. fighters, defense decisionmakers may want to continue modernizing U.S. fighter fleets for other reasons. One such reason is that U.S. fighters have to contend with ground-based air-defense systems as well as enemy fighters. New stealthy planes might weather improvements in enemy air defenses better than old nonstealthy ones. In addition, the United States relies on air power to offset the capabilities of enemy ground forces--as a way to hold down U.S. casualties, and as a supporting arm for U.S. and friendly ground forces. Consequently, it may wish to preserve tactical aircraft superiority to retain its benefits in those areas. Also, aircraft can provide firepower earlier in a conflict than any but the lightest Army forces.

**DoD'S PLANS AVOID LARGE AIRCRAFT SHORTFALLS,  
THOUGH FLEETS WILL EXPERIENCE UNPRECEDENTED AGING**

Last June, CBO projected that DoD's planned purchases of F-22s, F/A-18E/Fs, and JSFs should make up most of the shortfall created as the three services retire their older aircraft. I suggested then that the purchases should prevent shortfalls of more than about 200 planes. That point is still largely true, though the Air Force suggested recently that its total requirements were about 50 planes higher than CBO assumed last year. Thus, shortfalls at the end of the period we analyzed are somewhat larger than I reported last summer (see Figure 1).

FIGURE 1. FIGHTER AND ATTACK INVENTORIES, REQUIREMENTS, AND AVERAGE AGES WITH PURCHASES OF JOINT STRIKE FIGHTERS



SOURCE: Congressional Budget Office estimates using data from the Department of Defense.

NOTE: Aircraft retired or replaced before end of service life to fit requirements.



The services will, however, need to keep planes in the fleet for unusually long periods to prevent shortfalls from reaching unmanageable levels. As a result, the large number of older aircraft will drive the average age of DoD's fleets to unprecedented levels. As Figure 1 indicates, the average ages of Air Force aircraft will be higher than those in the Navy and Marine Corps, exceeding 15 years by 2003. That average age will climb to about 18 years by 2010, before it begins to decline as Joint Strike Fighters become operational. The Department of the Navy's fleet will remain relatively younger, reaching an average age of about 14 years around 2005. The average age will increase slightly until 2008 and then begin declining, when the Navy also receives deliveries of the Joint Strike Fighter.

The Department of Defense uses the average age of its aircraft fleet as a measure of modernization and a proxy for obsolescence of large blocks of the fleet. In the past, DoD officials have also argued that aging fleets will be less capable in combat, since enemy fighter fleets and air defenses will have modernized. The services also express concern that older fleets will be more difficult to operate and more expensive to maintain. Some trends in the fiscal year 1998 budget request may signal such problems. The Navy, for example, is arguing today that older aircraft in its fleet are driving up requirements for aircraft maintenance.

Those trends in aging may be of less concern than they were during the Cold War. But they do raise concerns about the level of flexibility that future

Administrations will have. For example, older fleets might be more likely to experience unanticipated structural fatigue problems. If old planes require modifications, they could add substantially to overall funding requirements.

#### **DoD'S PLANS WILL BE COSTLY AND DIFFICULT TO AFFORD WITHOUT CHANGING SPENDING PATTERNS**

If problems develop with the aging fleet, adding to funding for fighter planes could pose serious difficulties. The Administration's plans to modernize are already costly. CBO made two estimates of fighter costs. We based one projection on DoD's estimates for fighter prices and the other on historical relationships between fighter prices and such factors as weight and capability. We then looked at the shares of past budgets that DoD has devoted to fighter purchases to give us a benchmark for the funds that might be available.

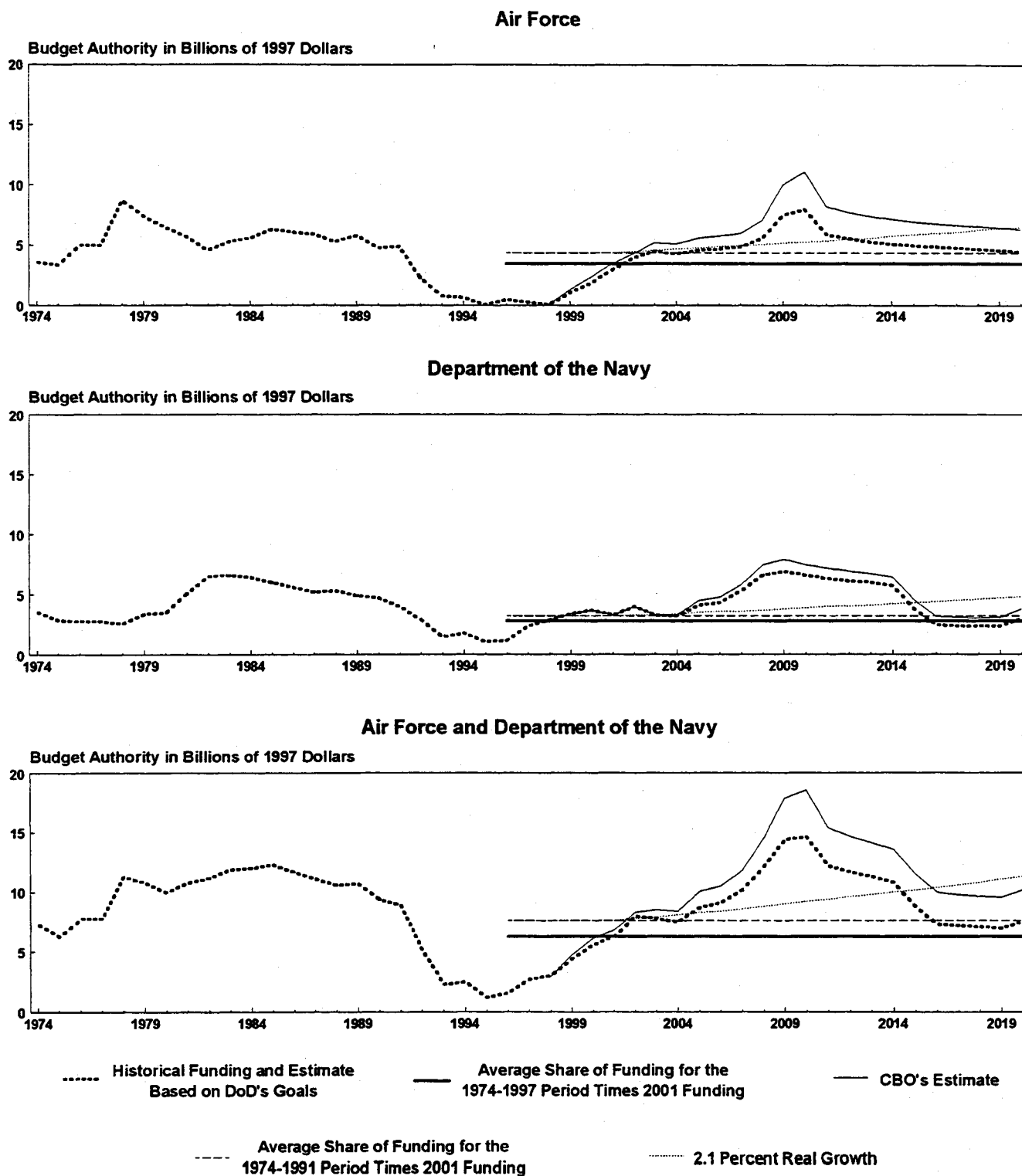
DoD asked for \$2.2 billion to purchase advanced fighters in its 1998 request. It also asked for about \$3.1 billion for advanced fighter development, \$159 million to buy three F-15Es, and \$133 million to develop the F-15E. Procurement funding for new fighters is scheduled to rise to almost \$7 billion by 2003 in DoD's 1998 Future Years Defense Program. Even larger sums would be needed in the longer term. CBO projects that spending to purchase the fighter and attack aircraft in DoD's

plans will average \$9.6 billion annually over the 2002-2020 period, even under the lower estimate of fighter prices. At that lower estimate, more than \$14 billion would be needed in 2010, when DoD plans to purchase a total of more than 250 of the three types of planes (see Figure 2).

If DoD's estimates of procurement costs prove too optimistic, as CBO's analysis indicates, spending needs could be even greater. DoD would need to spend \$14 billion or more each year on fighter purchases for six of the years when purchases for the different programs overlap, and more than \$18 billion in 2010 when all planes are to be bought in large quantities. Annual funding needs for the 2002-2020 period under this higher estimate would average \$11.9 billion.

Even the most modest of those estimates suggest that without real growth in budgets, DoD would need to devote much more funding to fighters in the future than it has in the past. On average, the Air Force and the Navy spent about 4.6 percent and 3.6 percent, respectively, of their annual budgets on purchasing fighter aircraft over the 1974-1997 period. CBO applied those percentages to the Administration's plans for service budgets in 2001--the last year for which plans were available. According to that estimate, the services might have a total of about \$6.3 billion to spend for fighter aircraft each year if they follow past patterns in spending and if their budgets remain level after 2001. CBO's estimates of future funding requirements are 50 percent to 90 percent higher than that amount.

FIGURE 2. HISTORICAL AND PROJECTED FUNDING FOR FIGHTER AND ATTACK AIRCRAFT (By fiscal year)



SOURCE: Congressional Budget Office.

NOTE: Based on 1997 budget.

Meeting the funding requirements in the years when fighter purchases overlap would be even more difficult. The peak funding for new fighter purchases during the historical period for which we have data--namely, 1974 through 1997--totaled \$12.3 billion, about \$2 billion to \$6 billion short of the funds DoD might need for peak funding in the future. Those previous peaks also occurred during the mid-1980s, when defense budgets were at peacetime highs. For example, in 1985, when funding for fighters reached \$12.3 billion, DoD had a budget that represented purchasing power of more than \$400 billion in 1997 dollars.

Current plans suggest that DoD might need to spend a much larger share of future budgets on tactical fighters than it has at least since 1974. Since then, the largest share of the procurement budget that DoD devoted to purchases of new fighters was 16.6 percent in 1978 and 1979. Even if procurement budgets grow to about \$61 billion (in 1997 dollars) by 2002 as projected in the current plan--and such increases have eluded DoD's grasp in the last three budgets--and if they keep that value, DoD would need to devote an unprecedented 30 percent of procurement funding to fighters in 2010 if it cannot hold down prices.

Without real growth in future defense budgets, fighters could realize such increases only at the expense of other weapons. Yet the same pressures that lead the Defense Department to wish to increase fighter procurement levels after the post-Cold War procurement holiday are likely to be felt for other types of weapons as

well. For example, the Navy expects to purchase about twice as many ships on average during the 2002-2020 period as during the 1997-2001 period. Furthermore, the Army plans to modernize its helicopter fleet extensively. Also, any increases to fund long-range bombers or additional airlift aircraft could come at the expense of funds for fighter planes.

Although some mission areas--such as antisubmarine warfare--have been deemphasized at the end of the Cold War, other areas, such as mobility, have escalated in importance. National and theater-level missile defenses could be strong contenders for defense funds.

This year's budget suggests that DoD may already be experiencing difficulties in increasing its purchases of new aircraft. Last year, the Air Force planned to buy 124 F-22s over the 1998-2003 period. This year's plan would buy only 70 of those fighters during the same period. The delay in F-22 purchases may, at least in part, relate to technical problems in the plane's development. But the delay also relates to cost increases. The F-22 is not alone in experiencing delays. This year the Navy plans to buy a total of 10 fewer F/A-18E/Fs in 1998 and 1999 than it expected to last year, apparently because it lacks the money to pay for them, not because the fighter is growing in price.

## THE JOINT STRIKE FIGHTER IS THE CENTERPIECE OF DoD'S FIGHTER/ATTACK PLANS AND A DEPARTURE FROM PAST PATTERNS

The success of DoD's plans for tactical fighter procurement depends in great measure on DoD's ability to produce a Joint Strike Fighter that departs from past development and production patterns for fighter aircraft. One of the greatest departures from past practices is the number of missions that the JSF family of aircraft is expected to undertake. The plane is supposed to perform virtually every mission that fighter aircraft perform in the force structure today and, moreover, to do so with a family of planes that have as much as 80 percent common parts.

Joint Strike Fighters are to be fielded in Air Force, Navy, and Marine Corps inventories. Partly as a result of that high level of cross-service operation, commonality, and the use of commercial practices, DoD expects JSF to break the spiraling of prices for fighter aircraft that has been going on for at least 40 years.

The question is whether the Joint Strike Fighter will be able to meet those ambitious goals. A number of the goals set for the JSF might be incompatible. For example, its price must be kept relatively low to meet the Air Force's need to purchase planes in quantity. But the Navy's desire for a very stealthy aircraft that can operate over fairly long ranges could drive up the price. Also, the STOVL planes

that can operate off of the amphibious ships that transport Marines to war typically pay for that capability by being less capable in other ways.

Such incompatibility of goals may lead the services to make compromises if the JSF program is to retain its joint-service characteristics. The services may be willing to accept operational trade-offs. But many past DoD programs have started out assuming a high level of joint participation among the services that later dissipated or never even materialized.

Some critics also worry that the JSF is the most complex development program to be managed under DoD's new guidelines for acquisition. Those new rules permit programs to skip many traditional DoD reviews. Such reviews take time and often add to the cost and complexity of a program, but they also may lessen the likelihood that DoD spends too much time (and money) on a beleaguered program.

The program's expectation of holding down the price of the Joint Strike Fighter would represent a significant break with past patterns. If the plane's costs reflect previous trends in prices, total procurement costs could be about 36 percent higher than current estimates--climbing to about \$197 billion.



## WHAT OTHER OPTIONS MIGHT BE CONSIDERED FOR MODERNIZING TACTICAL AIRCRAFT?

---

Since the Administration's plan may lead to funding shortfalls, the Congress and the Department of Defense may wish to consider alternatives. CBO evaluated four alternative strategies--illustrated in seven options or variations of options--that might be pursued in the future if less money is available for purchasing tactical fighters than current plans require.

### Option I: Set Priorities for Development

DoD might wish to consider an alternative that sets priorities for modernization. Some critics of the size of DoD's air forces have argued that considerable duplication of effort exists in tactical aviation. DoD could place priorities on its force requirements and consequently modernize and retain only the highest-priority forces. CBO's Options IA and IB illustrate two approaches to pursuing that strategy.

Option IA: Set Priorities for Tactical Aircraft Requirements--Emphasizing the Air Force. Because Air Force Joint Strike Fighters are to be purchased in the largest quantities, DoD could choose to modernize the Air Force fleet while eliminating requirements for a stealthy Navy strike fighter and a Marine Corps advanced STOVL version (for types and quantities of planes purchased under the Administration's plan

and alternatives during the 1997-2020 period, see Table 1). Under that alternative, CBO assumes that Air Force and Navy fighters would provide air support for Marine Corps ground forces and that no planes would be bought for Marine Corps squadrons providing dedicated air support.

The option also assumes that DoD would continue to purchase F/A-18E/Fs and F-22s in the quantities currently assumed under the Administration's plans. Since the option purchases about the same number of planes for the missions it retains, it produces fleets about the same age as the Administration's plan. The option might offer somewhat less risk of a design failure, since it eliminates the more challenging aspects of the JSF program. Moreover, it would be somewhat more affordable than current plans: its procurement would cost about \$9.4 billion each year on average over the 2002-2020 period compared with the \$11.9 billion called for in DoD's plans (see Table 2 for the costs of the Administration's plan and options).

Even so, the option is still expensive--requiring roughly 50 percent more funding than historical shares. Option IA would also leave the Navy without a highly stealthy plane at least through 2020 and probably much longer. Not least, DoD has rejected options that, like this one, would have eliminated dedicated Marine Corps aircraft, because it feared that the other services would not do an adequate job of supporting Marine ground forces.

TABLE 1. TYPES AND QUANTITIES OF AIRCRAFT PURCHASED  
UNDER ALTERNATIVES FOR THE 1997-2020 PERIOD

Aircraft	Administration's Plan	Options					
		IA	IB	IIA	IIB	IIIA and IIIB	IV
Air Force							
F-16	6	6	894	6	6	768	6
F-15E <sup>a</sup>	6	6	492	6	6	214	6
F-22	438	438	0	438	438	240	240
F/A-18E/F	0	0	0	1,202	1,202	0	0
JSF(AF)	<u>1,320</u>	<u>1,320</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>550</u>	<u>556</u>
Subtotal	1,770	1,770	1,386	1,652	1,652	1,772	808
Navy							
F/A-18C/D	6	6	6	6	6	1,066	6
F/A-18E/F	1,000	1,000	1,000	1,300 <sup>b</sup>	1,300 <sup>b</sup>	0	650
F-117N	0	0	0	0	204	0	0
F-22N	0	0	0	180	0	0	0
JSF(N)	<u>180</u>	<u>0</u>	<u>c</u>	<u>0</u>	<u>0</u>	<u>96</u>	<u>92</u>
Subtotal	1,186	1,006	1,006	1,486	1,510	1,162	748
Marine Corps							
New AV-8B	0	0	0	0	0	60	0
Comanche	0	0	0	258	258	0	0
JSF (ASTOVL)	<u>480</u>	<u>0</u>	<u>660</u>	<u>0</u>	<u>0</u>	<u>228</u>	<u>146</u>
Subtotal	480	0	660	258	258	288	146
Total	3,436	2,776	3,052	3,396	3,420	3,222	1,702

SOURCE: Congressional Budget Office

NOTES: JSF = Joint Strike Fighter; ASTOVL = advanced short takeoff vertical landing.

- The Administration included six more F-15Es in the plans associated with the 1998 budget, three each in 1998 and 1999.
- Includes purchases for Marine Corps squadrons.
- CBO assumed that advanced short takeoff vertical landing versions of the Joint Strike Fighter are purchased for the Navy's carrier air wings. Those planes are included in Marine Corps purchases.

TABLE 2. AVERAGE ANNUAL PROCUREMENT FUNDING FOR THE  
ADMINISTRATION'S PLAN AND ALTERNATIVES (In billions of 1997 dollars)

Alternative	Period	
	1997-2001	2002-2020
Administration's Plan (CBO's Estimate) <sup>a</sup>	4.7	11.9
Option IA: Set Priorities for Development (Emphasize Air Force Missions)	4.7	9.4
Option IB: Set Priorities for Development (Emphasize Naval Missions)	5.6	7.4
Option IIA: Build on Existing Development Efforts (With F-22N)	4.7	9.3
Option IIB: Build on Existing Development Efforts (With A/F-117X)	4.7	9.2
Option IIIA: Emphasize Current Generation Aircraft	5.3	7.9
Option IIIB: Emphasize Current Generation Aircraft with Modifications	4.9	8.3
Option IV: Make Proportional Cuts	4.7	6.3

SOURCE: Congressional Budget Office.

NOTE: Prices based on cost-estimating relationships.

- a. These numbers are based on the 1997 budget. The plan associated with the Administration's 1998 budget request would spend an average of about \$4 billion annually on new fighter purchases over the 1997-2001 period. CBO has not yet received an update for the years beyond 2003.

Option IB: Set Priorities for Tactical Aircraft Requirements--Emphasize the Navy and Marine Corps. Some defense experts have argued that the air forces of the Navy and Marine Corps should receive highest priority in the post-Cold War environment. Option IB therefore assumes that DoD chooses to develop planes to modernize those naval forces, while deferring the modernization of land-based Air Force units. Specifically, the alternative assumes that a variation of the Joint Strike Fighter is developed only for the Navy and Marine Corps. In keeping with the theme of emphasizing naval forces, the alternative also continues the interim development and purchase of the F/A-18E/F.

Since the alternative de-emphasizes land-based fighter and attack missions, it cancels development of the F-22 and the JSF version for the Air Force, though it hedges against uncertainty and keeps up inventories by purchasing additional F-15s and F-16s.

Because Option IB purchases less capable, less expensive planes on average, it would be less expensive than the Administration's plan. It would have an average annual procurement cost of about \$7.4 billion over the 2002-2020 period, about \$4.5 billion less than the Administration's plan. Thus, it should be easier to afford than that plan. The option should also entail less risk in the development stage than the Administration's plan, since it would build fewer new planes.

Option IB also has a number of disadvantages. It is still expensive and might be difficult to afford. The Air Force argues that canceling the F-22 would increase combat losses in future conflicts. Canceling the F-22 could also cause a delay in the JSF program, since that program depends on successful development of the F-22's engine and some F-22 avionics.

#### Option IIA and Option IIB: Build on Existing Development Efforts

CBO considered other alternatives that would restructure planned development. Options IIA and IIB assume that DoD would design versions of planes that are farther along in the development process than the Joint Strike Fighter and would purchase more of them. The options would be almost as costly as Option IA. Yet they would pose less risk of prices escalating and would, moreover, permit DoD to field a highly capable fleet.

CBO assumes that DoD would design and purchase a version of the Air Force's F-22 for the Navy in Option IIA. Option IIB assumes that the Navy purchases a version of the stealthy F-117 that is now part of Air Force inventories. DoD is also assumed to purchase F/A-18E/Fs both for the Navy, as the Administration plans, and for the Marine Corps fighter squadrons. It is also assumed that F/A-18E/Fs will fill out the Air Force's requirement for the Joint Strike Fighter. A

seaborne version of the stealthy Comanche attack helicopter that the Army is developing is assumed to meet close air-support requirements for the Marine Corps.

Both versions of Option II would entail less risk of design failure than the Administration's plan, since developing those variations should be less challenging than developing the totally new Joint Strike Fighter. Since they purchase stealthy planes for the Navy, buy dedicated air support for the Marine Corps, and purchase a plane that meets some of the Air Force requirements for the JSF, Options IIA and IIB may provide improvements in capability over DoD's current plans.

The options cost, however, an average of \$9.2 billion or \$9.3 billion a year over the 2002-2020 period--depending on which plane is bought for Navy fleets--and that amount is almost as high as the price of Option IA. Although these options are less costly than the Administration's plan over the same period, their price greatly exceeds the funding associated with previous shares of the budget for fighter aircraft.

### Option III: Purchase Aircraft That Are Now in Production

One way to keep force size up and avoid substantial aging of the fleet, while holding funding down, would be to continue purchasing aircraft that are already in production--and cancel or scale back the development programs. Option III cancels

the Navy's F/A-18E/F program and purchases additional F/A-18C/D aircraft for the Navy and Marine Corps. The option halves F-22 purchases and buys more F-16s and F-15Es for Air Force fleets. (CBO evaluated two variations of Option III: Option IIIA buys current model F-16s, and Option IIIB purchases an improved version of the plane.) It also delays purchases of the Joint Strike Fighter for seven years. The option also continues purchases of AV-8Bs for the Marine Corps's close air-support mission.

Keeping the current generation of planes in production and deferring modernization may be acceptable to those policymakers who do not expect extensive modernization on the part of potential adversaries for several decades. The additional aircraft purchased under Option III's assumptions would slow aging of the fleet in the near term, compared with the Administration's plan. The delays in development assumed under the option should also reduce design risks for the F-22 and JSF programs, though the designs--particularly for the JSF--would still be challenging. In addition, the forces purchased under this alternative would represent considerable improvements in capability over today's fleets, though such improvement would be more limited than that of the other alternatives considered.

Option III might also have a better chance of being affordable. It yields much lower costs during the 2002-2020 period with annual requirements for funding procurement that could average \$7.9 billion to \$8.3 billion--savings of \$3.6 billion



to \$4.0 billion compared with DoD's current plan. Although those costs are less than the Administration's plan, they remain about 25 percent to 30 percent higher than the funds for previous shares of funding for fighter aircraft.

The services will criticize Option III for several reasons. The Air Force is already concerned about cuts in F-22 purchases. The Navy will raise concerns about losing the added range and stealth associated with the F/A-18E/F program. Not least, the Marine Corps will find the 60 added AV-8Bs to be insufficient compensation for the JSF delay. But if affordability is a concern, that sort of strategy might represent a way to lower costs while keeping forces at levels close to those currently planned.

#### Option IV: Make Proportional Cuts to All Programs and Accept Force Cuts

CBO also considered an alternative that would focus on modernization at the expense of force structure. The option brings spending for new fighter purchases during the 2002-2020 period to \$6.3 billion, the level associated with shares given it in the past. The option continues to develop all currently planned modernization programs and allocates cuts proportionately. The philosophy behind such an option might be that it is more important to pursue technological challenges in the near and medium term than it is to preserve forces. Such an option might also illustrate the force structure

that DoD might end up with if it receives no more money and yet is unable to choose among conflicting budget priorities.

Total aircraft purchases under those assumptions would be cut from the 3,436 planes the Defense Department wishes to buy during the 1997-2020 period under the 1997 plan to 1,702 planes. As a result of those reduced purchases, Option IV produces a small force. By 2020, DoD would be short almost 1,450 planes--around 935 in the Air Force and about 515 in the Navy. The force structure of the Air Force therefore might need to be cut almost in half, and the Navy's force structure would need to be considerably reduced. By 2020, Air Force inventories would average 19 years of age, even older than the already unprecedented ages under the Administration's plan. Navy inventories would average 14 years of age in 2020, compared with 11 years under the Administration's plan.

## CONCLUSION

To summarize, CBO's analysis suggests that DoD's current plans for fighter purchases pose a number of problems. If they actually occur, planned purchases would meet requirements. They would also produce a very capable fleet. But CBO's analysis suggests that--at least without increasing defense budgets in the future--they may not be affordable and may need to be scaled back in some way. Our analysis

also suggests that trends in the aging of the fleet may mean that decisionmakers will have less flexibility in addressing problems in the future.

CBO's analysis therefore illustrates a number of ways of scaling back purchases of fighter and attack aircraft to make them more affordable or to prevent them from crowding out other portions of future defense budgets. But each of these alternatives involves choosing among the programs that the Administration proposes and may therefore be difficult to pursue. Nevertheless, our analysis suggests that the outcome of deferring decisions may be the least attractive choice: it could result in a round of striking force reductions.